



# National Water Quality Monitoring Council

Working together for clean water

## Working Together For Clean Water: 2013-2014 Council Highlights

Each day, water-quality issues become more complex and the need to address them more urgent. The demand for clean, pure water to support a complex web of human activities and aquatic ecosystems continues to grow. At the same time, budgets to monitor, assess, protect and restore our waters are tighter, forcing scientists and managers to attempt to do more with less. The National Water Quality Monitoring Council (Council) exists to bring together the diverse expertise that is needed to develop collaborative, comparable, and cost-effective approaches to monitor and assess our Nation's water quality (<http://acwi.gov/monitoring/>). These approaches are fundamental to the successful management and sustainability of our water resources.

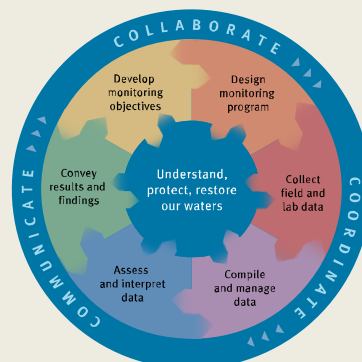


The Council and its partners have made significant advances in its priorities, including data management and information dissemination; compatible web services; State and regional councils; volunteer monitoring; assessment and statistical tools; sensors and real-time monitoring; and integrated land-to-sea assessments through the

Network. Multiple Council products and services are now available to help meet water needs across the Nation.



*Created in 1997, the National Water Quality Monitoring Council (Council) is a national forum for coordination of comparable and scientifically defensible methods and strategies to improve water quality monitoring, assessment and reporting. The Council brings together scientists, managers, and citizens to ensure information about the quality of our water resources is accurate, reliable, and comparable. The Council fosters collaborative and cost-effective approaches to improve and advance the science of water-resources monitoring. The Council is chartered as a subgroup of the Advisory Committee on Water Information (ACWI) under the Federal Advisory Committee Act.*



**The Monitoring Framework**

## Council Workgroups

**Methods and Data Comparability Board (Methods Board)** – Provides a forum for evaluating and promoting methods that facilitate comparability among water-quality monitoring and analytical methods. (**Contacts:** Dan Sullivan, [djsulliv@usgs.gov](mailto:djsulliv@usgs.gov), (608) 821-3869 and April Dupre, [dupre.april@epa.gov](mailto:dupre.april@epa.gov), (513) 569-7019)

The **Aquatic Sensor Workgroup** is a subcommittee of the Methods Board that has focused on quality control and data management of sensor data. (**Contacts:** Dan Sullivan, [djsulliv@usgs.gov](mailto:djsulliv@usgs.gov), (608) 821-3869 and Chuck Dvorsky, [cdvorsky@tceq.texas.gov](mailto:cdvorsky@tceq.texas.gov), (512) 239-5550)

**Water Information Strategies Workgroup** – Defines and promotes strategies for monitoring designs; data management, access, and exchange; data integration and analysis; and information reporting to address water needs. (**Contacts:** Mary Skopec, [mary.skopec@dnr.iowa.gov](mailto:mary.skopec@dnr.iowa.gov), (319) 335-1579, Doug McLaughlin, [douglas.mclaughlin@wmich.edu](mailto:douglas.mclaughlin@wmich.edu), (269)-276-3545, Leslie McGeorge, [leslie.mcgeorge@dep.state.nj.us](mailto:leslie.mcgeorge@dep.state.nj.us), (609) 292-1254, and Dan Sullivan, [djsulliv@usgs.gov](mailto:djsulliv@usgs.gov), (608) 821-3869)

**Collaboration and Outreach Workgroup** – Works to build partnerships that foster collaboration and communication within the water-quality monitoring community. (**Contacts:** Cathy Tate, [cmtate@usgs.gov](mailto:cmtate@usgs.gov), (303) 499-8946, Barb Horn, [Barb.Horn@state.co.us](mailto:Barb.Horn@state.co.us), (970) 382-6667, and Danielle Donkersloot, [Danielle.Donkersloot@dep.state.nj.us](mailto:Danielle.Donkersloot@dep.state.nj.us), (609) 292-1254)

**National Network of Reference Watersheds** – Defines and promotes strategies for improved coordination and collaboration for sharing and accessing reference watershed information and water-quality data for freshwater streams (**Contacts:** Mike McHale, [mmchale@usgs.gov](mailto:mmchale@usgs.gov), (518) 285-5675 and Bill Wilber, [wgwilber@usgs.gov](mailto:wgwilber@usgs.gov), (703) 648-6878)

**National Water Quality Monitoring Network for Coastal Waters and Their Tributaries** – Promotes strategies and opportunities for collaboration among different freshwater and coastal water-quality programs and networks. (**Contacts:** Hugh Sullivan, [Sullivan.hugh@epa.gov](mailto:Sullivan.hugh@epa.gov), (202) 564-1763, Dennis Apeti, [dennis.apeti@noaa.gov](mailto:dennis.apeti@noaa.gov), (301) 713-3028, ext 132 and Dan Sullivan, [djsulliv@usgs.gov](mailto:djsulliv@usgs.gov), (608) 821-3869)

## Water Quality Portal – Expanding Data Holdings and Data Use

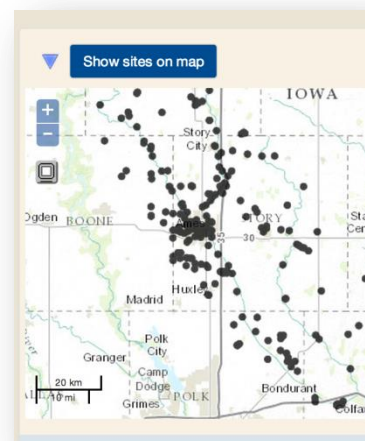
Since being launched in 2012, the Water Quality Portal (Portal) has experienced increased growth and use. To date, over 10,000 unique visitors have accessed the Portal for water quality data records. On a given week day, there are between 50-100 visits and as many as 3,000 downloads per day via the Portal web services. The increased use of the services means that there are now more users accessing the Portal through automated processes than person visits. For data access and utility, this is a clear demonstration of the value of the Portal. In fact, in a recent 24 hour period, the web service calls downloaded 31,858,249 result records and 5,139,687 station records.

In early 2014, the Portal Team – supported by EPA and USGS – successfully deployed the addition of a new data partner, the USDA Agriculture Research Service, to make their data available through the Portal. STEWARDS (Sustaining the Earth's Watersheds, Agricultural Research Data System) is the USDA ARS's repository to compile, document and provide access to data from ARS research watersheds, which represents one of the largest research watershed data collections in the world. The teams worked together over the past two years to map ARS data to the Water Quality eXchange (WQX) schema and resolve other technical data migration issues. Now, users can query data from USGS National Water Information System (NWIS), USEPA Storage and Retrieval Data Warehouse (STORET), and USDA STEWARDS databases simultaneously. To date, ARS contributes 1,076,951 sample results from 168 sites across the country.

The Portal continues to expand its utility by accessing monitoring methods in the National Environmental Methods Inventory (NEMI). The Portal leverages the NEMI analytical method catalogue and provides an immediate display of station and data queries on the Portal mapping interface. Now, water managers and data analysts can quickly link a sample result to the full method that was used to determine that result.

The Water Quality Portal is a collaborative effort by the National Water Quality Monitoring Council, the USEPA, and the USGS to create a single user-friendly web interface to locate water-quality data collected by Federal, State, and tribal partners in a single format. It contains over 150 million public water-quality data records that can be accessed and downloaded in a variety of formats.

Visit the **Water Quality Portal** on the Web at: [www.waterqualitydata.us](http://www.waterqualitydata.us). (**Contacts:** Charles Kovatch, [kovatch.charles@epa.gov](mailto:kovatch.charles@epa.gov), (202) 566-0399 and Jim Kreft, [jkreft@usgs.gov](mailto:jkreft@usgs.gov), (608) 821-3919).



Map output from the **Water Quality Portal** showing sites where water nutrient samples have been collected in the South Skunk Basin. The merged dataset includes NWIS, STORET, and STEWARDS sites.



## Establishing a National Network of Reference Watersheds for Freshwater Streams



A unique national network of pristine and minimally disturbed watersheds is the focus of a new

Council effort to address the need for reliable long-term data and information from watersheds that are minimally disturbed by human activities. The collaborative, multipurpose design will emphasize chemical, physical, and biological aspects of water quality and integrate, to the extent possible, with existing networks. The National Network of Reference Watersheds (NNRW) is envisioned as a web-based data delivery system. The NNRW will define a set of “core” reference watersheds that includes the least disturbed watersheds having the longest periods of record for selected water-quality data. It is also envisioned that the NNRW web-based resource will allow users to define their own reference criteria to identify watersheds that best meet their specific needs and objectives. One major goal is to link the site information and the watershed database being developed for the NNRW to the National Water Quality Monitoring Council's Water-Quality Portal to deliver water-quality data for sites of interest. Membership in the network will be voluntary and open to interested individuals and institutions. More information at: [http://acwi.gov/monitoring/workgroups/wis/National\\_Reference\\_Network\\_for\\_Streams.pdf](http://acwi.gov/monitoring/workgroups/wis/National_Reference_Network_for_Streams.pdf) (**Contact:** Mike McHale, [mmchale@usgs.gov](mailto:mmchale@usgs.gov), (518) 285-5675).

### Aquatic Sensor Workgroup (ASW)

The ASW worked with partners in public and private sectors to develop the Continuous Monitoring track at the 2014 National Monitoring Conference. Among the session topics are innovative technologies, regulatory applications of sensor data, data quality assurance and data management, and sensor developments in energy production. In addition, a workshop that explores a myriad of issues associated with the large datasets produced by continuous monitoring with presenters from USGS, EPA, CUAHSI, academia, and states will provide an information-packed 3 hours in the middle of the conference.

Other products developed through the sensor partnership are available, including a checklist for users related to calibration and record keeping to ensure that data are of known and documented quality; a deployment guide to assist in siting and maintaining sensors in the field; a draft data elements (or metadata) for sensors; and a glossary of terms. A website (<http://watersensors.org/>) has been built to help disseminate this information and as a clearinghouse of information on

emerging sensors information. (**Contacts:** Dan Sullivan, [djsulliv@usgs.gov](mailto:djsulliv@usgs.gov), (608) 821-3869 and Chuck Dvorsky, [cdvorsky@tceq.texas.gov](mailto:cdvorsky@tceq.texas.gov), (512) 239-5550).

## National Environmental Methods Index

The National Environmental Methods Index (NEMI), in its 12th year as one of the Council's flagship products, is an online resource of laboratory methods and field protocols, including more than 1,200 methods for chemical, biological, and physical monitoring (see <http://www.nemi.gov/>). NEMI continues to evolve; a new version (4.0) was released this year that boasts numerous improvements. A “protocol library” is being developed that will provide access to field collection protocols and the key methods contained in them; USGS-NAWQA and EPA-NRSA protocols are the first to be incorporated. (**Contact:** Dan Sullivan, [djsulliv@usgs.gov](mailto:djsulliv@usgs.gov), (608) 821-3869).



### Water Quality Statistical and Assessment Methods Online Database Available!

An online searchable clearinghouse of methods to analyze water quality data and help support water quality assessments was implemented by the Council's Water Quality Statistics and Assessments workgroup. The effort is being integrated with the Council's popular National Environmental Methods Index (NEMI, <http://www.nemi.gov/>) and joins sensors and biological methods as recent additions to this growing resource. The user interface is designed to support a variety of queries. Some may be driven by basic water resources questions like “How do I compare the nutrient concentrations at two sites?” or “How do I look for patterns in macro-invertebrate data?” Or users may want to query “Statistical NEMI” (as it is called by the workgroup members) to find information on the latest methods used to evaluate temporal trends. The information in the database includes links to guidance documents and website, downloadable software, and more. Users also have the option of providing their own methods to the database. (**Contacts:** Doug McLaughlin, [douglas.mclaughlin@wmich.edu](mailto:douglas.mclaughlin@wmich.edu), (269)-276-3545, Leslie McGeorge, [Leslie.McGeorge@dep.state.nj.us](mailto:Leslie.McGeorge@dep.state.nj.us), (609) 292-0427, and Dan Sullivan, [djsulliv@usgs.gov](mailto:djsulliv@usgs.gov), (608) 821-3869).

### Council Hosts Its 9<sup>th</sup> National Monitoring Conference – Working Together for Clean Water

A centerpiece forum for communication and collaboration among the monitoring community is the Council's biennial national conference. The 9th National Monitoring Conference in Cincinnati, Ohio includes more than 500 water practitioners from all backgrounds. This national forum provides an exceptional opportunity for Federal, State, local, tribal, volunteer, academic, private, and other water stakeholders to

exchange information and technology related to water monitoring, assessment, research, protection, restoration, and management, as well as to develop new skills and professional networks. (**Contacts:** Cathy Tate, [cmtate@usgs.gov](mailto:cmtate@usgs.gov), (303)-236-6927, Jeff Schloss, [jeff.schloss@unh.edu](mailto:jeff.schloss@unh.edu), (603) 862-3848, and Alice Mayo, [Mayio.Alice@epamail.epa.gov](mailto:Mayio.Alice@epamail.epa.gov), (202) 566-1184).

## Volunteer Monitoring and Citizen Science

Connecting volunteer monitoring groups to existing and new resources as well as to each other and with other monitoring efforts is the purpose of the Council's new volunteer monitoring



webpage. The page provides an explanation of why volunteer monitoring is effective and important, provides information and links to the USEPA's National Directory of Volunteer Monitoring Programs and volunteer monitoring list serve,

highlights volunteer monitoring success stories, links to a "how-to" library compiled by the National Water Resource project, and lists other key resources. Coming this spring, the website will include an interactive map of where volunteer monitoring programs are located. The website is also the home of the brand new e-newsletter *Volunteer Monitoring News* and provides a link to archived issues of the *Volunteer Monitor Newsletter*.

Please visit:

<http://acwi.gov/monitoring/vm>

and provide your success story, program location or just share

with others. (**Contact:** Barb Horn, [Barb.Horn@state.co.us](mailto:Barb.Horn@state.co.us), (970) 382-6667 and Danielle Donkersloot, [Danielle.Donkersloot@dep.state.nj.us](mailto:Danielle.Donkersloot@dep.state.nj.us), (609) 292-1254 ).

## Advancing the Design and Objectives of the National Water Quality Monitoring Network for Coastal Waters and Their Tributaries (NMN)

The National Ocean Council released the [National Ocean Policy Implementation Plan](#) to address some of the most pressing challenges facing the ocean, our coasts, and the Great Lakes. One of the actions in the plan charges the NWQMC to further implement the design of the NMN, and to this end, we are promoting opportunities for collaboration among different freshwater and coastal water-quality programs and networks. Elements of the plan include promoting

application of new sensor technologies, increasing accessibility of data, promoting linkages between freshwater and coastal nutrient models, and assessing how the design of the NMN can address important coastal water-quality issues in

select estuaries. (**Contacts:** Hugh Sullivan, [Sullivan.hugh@epa.gov](mailto:Sullivan.hugh@epa.gov), (202) 564-1763, Dennis Apeti, [dennis.apeti@noaa.gov](mailto:dennis.apeti@noaa.gov), (301) 713-3028, ext 132, and Dan Sullivan, [djsulliv@usgs.gov](mailto:djsulliv@usgs.gov), (608) 821-3869 for more information on Council activities related to the NMN).



[Demonstration studies of the Network](#) are being conducted in Lake Michigan (**Contact:** Dan Sullivan [djsulliv@usgs.gov](mailto:djsulliv@usgs.gov), (608) 821-3869); Albemarle Sound, NC (**Contact:** Michelle Moorman, [mmoorman@usgs.gov](mailto:mmoorman@usgs.gov), (919) 571-4013); and Puget Sound, WA (**Contact:** Kathy Conn, [kconn@usgs.gov](mailto:kconn@usgs.gov), (253) 552-1677).

## The Council Continues to Reach Out to the Water Monitoring Community by:

Publishing the bi-annual online issues of *National Water Monitoring News*, highlighting recent activities of the national, State, regional, and tribal councils, watershed partnerships, and volunteer monitoring groups; projects, publications, tools, findings or announcements of interest to the water monitoring community. (<http://acwi.gov/monitoring/newsletter/>).

Hosting **webinars** representing a wide range of topics and audiences including State and regional councils, volunteer and tribal monitoring, sensors, NEMI, data exchanges, Healthy Waters 101, Ecological Flows in the Shenandoah River Valley, EPA's Water Contaminant Information Tool (WCiT), National Ecological Observatory Network (NEON) and much more!

**Supporting** the creation and sustaining of partnerships among the water monitoring community, including State, regional, and tribal councils, as well as watershed groups and alliances through webinars and organizing workshops at the National Monitoring Conference. (**Contacts:** Cathy Tate, [cmtate@usgs.gov](mailto:cmtate@usgs.gov), (303) 236-6927, Barb Horn, [Barb.Horn@state.co.us](mailto:Barb.Horn@state.co.us), (970) 382-6667, and Danielle Donkersloot, [Danielle.Donkersloot@dep.state.nj.us](mailto:Danielle.Donkersloot@dep.state.nj.us), (609) 292-1254 ).

**Additional information on Council activities** can be found at the Council website, <http://acwi.gov/monitoring/> and through the Council Co-Chairs, Susan Holdsworth, USEPA, [holdsworth.susan@epa.gov](mailto:holdsworth.susan@epa.gov), (202) 566-1187 and Gary Rowe, USGS, [glrowe@usgs.gov](mailto:glrowe@usgs.gov), (303) 236-1461.